which we treat is, in uncomplicated cases, the consequence of effusion from a deeper source. I can easily imagine the extension of inflammation from the fibrous structures of the lid, to its conjunctival surface, and thence to the sclerotic conjunctiva; but this complication did not occur in the cases which I have related.

"In distinguishing those cases, I would not be supposed to mean, that inflammation of this tunic is a disease apart, and never combined with a similar condition of the periosteum or cellular tissue, on the one hand, or inflammation of the eyeball itself, on the other. I am aware they may exist together, for I have seen such cases. All I mean to assert is, that inflammation of the tunic described, may be the primary affection, and the point of departure from which the diseased action may spread to the other fibrous layers in the orbit, and finally reach the periosteum; and that the attack may even be limited to the tunica vaginalis oculi—that it may here produce a train of symptoms of the most dangerous kind, and which have been hitherto supposed to reside in the periosteum, because the existence of other fibrous membranes in the cavity was not suspected."

Mr. Ferrall shows the value of being acquainted with the anatomical structure he has described, in other cases, such as "adhesion of the tunica vaginalis to the globe of the eye from inflammation," "abscess between the tunic and the globe," "tumours within the tunica vaginalis oculi;" and lastly in the "extirpation of the globe." Respecting this last operation he makes the following valuable remarks.

"The comparative safety of an operation limited by this fibrous tunic is obvious, but an additional recommendation will be, the facility of its performance. The conjunctiva being freely divided, the six tendons may be snipped across with a scissors one after another, where they emerge from the tunic. The eyeball will then be easily detached by a probe or director passed freely around it; when one step alone would remain—the division of the optic nerve. When we recollect that the roof of the orbit is occasionally found to be as thin as paper in some parts, it will appear most desirable to avoid stripping it of its coverings, by operating within this second orbit, or proper fibrous socket of the eye."

Mr. Ferrall ends his interesting paper by the following summary.

"The reflections suggested by a review of the cases which led to the present inquiry, as well as of this new and curious mechanism itself, may be reduced to the following propositions:—

1st. That the description of anatomists, which places the globe of the eye in contact with the fat and muscles of the orbit, is erroneous.

2d. That there exists a fibrous tunic, investing and insulating the eyeball, and separating it from all the other structures in the orbit.

3d. That the uses of this tunica vaginalis oculi are, to present a smooth surface, facilitating the movements of the eye; and by its density and tension, to protect it from the pressure incidental to the swelling of its muscles during their action.

4th. That the openings in this tunic perform the office of pulleys, giving a proper direction to the force exerted by the muscles,—securing the motions of rotation, and opposing those of retraction, which would otherwise predominate.

5th. That certain cases of disease within the orbit, accompanied by protrusion of the eyeball, are to be explained, only by reference to the tunica vaginalis oculi, and the other fibrous tissues now described.

6th. That a correct knowledge of the anatomy of the orbit and of the fibrous structures alluded to, is essential to the operating surgeon, in dealing with abscesses and tumours, in extirpation of the eyeball, in the operation for strabismus, and all operations on that cavity."—*Braithwaite's Retrospect*, No IV, from *Dublin Journ. Med. Sci.* July 1841.

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61. *Rupture of the Sclerotica by a blow with the Fist.*—John Hays, aged 39, was admitted into Middlesex Hospital, under Mr. Arnott, Oct. 4th, 1841. This

man, who had but one eye, the left having been destroyed by an attack of severe inflammation, and rendered atrophic many years ago, received a blow on it last night from a man's fist, at the door of a public house, and was immediately deprived of sight. The globe is very red, not from inflammation, but from blood extravasated under the conjunctiva, and into the anterior chamber. In the former situation it is principally under that part of the membrane which covers the upper half of the eye; in the latter the pupil is covered and a great part of the iris, yet this membrane at its lower part can be seen. The conjunctiva is entire; he cannot distinguish light from darkness; there is a trifling bruise of the lower eyelid; has little pain in the eye, and no headache; smells of gin, under the influence of which he is still. To have twenty-five grains of compound jalap powder directly, and the lead lotion to the eye. Confinement to bed and low diet.

5th. No pain; bowels acted tolerably. To have a compound senna draught. Continue lotion.

7th. So much absorption of the blood effused under the conjunctiva has taken place, that a rent in the sclerotic coat, at its upper part, can be perceived, about a quarter of an inch in length, and running parallel to the edge of the cornea, at the distance of 1-16th of an inch. The pupil also can be recognised, but not of its natural size, form, or situation. It is very large, oval, and close to the margin of the cornea, at the upper part, that which corresponds to the injury of the sclerotic. The iris is observed to be tremulous. The globe to the touch is soft and flaccid.

11th. Absorption further advanced. Rent in sclerotic gapes as if something slightly protruded through it. It is now distinguished that one side of the oval pupil is formed by the circular edge of the cornea, the iris having disappeared at this part; sees a large body of light. To have five grains of blue pill night and morning. Continue the lotion.

18th. Blood in anterior chamber entirely removed, that under conjunctiva nearly so; rent in the sclerotic less gaping, more light seen; can distinguish the form and outline of persons.

21st. Sight improving; can see the hand, and tell the number of fingers extended; edges of the crack in the sclerotic now approximated, so that it now shows as a mere line; globe less flaccid; it has more fulness and firmness; iris still tremulous; gums very tender, with mercurial fœtor of the breath. Omit the pills.

25th. Can now see to the end of the ward.

Nov. 1st. He says that his sight is weak. To have a blister to the forehead.

9th. His sight is now as good as it was before the accident; the cicatrix of the rent in the sclerotic is barely distinguishable.

Oct. 28th. In some clinical remarks on this case to-day, Mr. Arnott observed that the eyeball was well protected by its deep situation, and was seldom injured by a blow of the fist, as our pugilistic encounters sufficiently attested, although such an injury might occasionally happen.

In the condition in which the man's eye and sight were on his admission, he (Mr. Arnott) had stated at the time that caution was required as to what should be said of the chance of the recovery of sight; for its loss might depend either on the blocking up of the pupil by the extravasated blood, or it might be connected with laceration or bruise of the deeper parts of the eye, especially the retina.

With the view of assisting him in determining on which of the two causes just mentioned the loss of sight depended, he endeavoured to ascertain from the man whether any interval, however brief, intervened between the receipt of the blow and the total loss of vision, but he could not get a satisfactory answer. The man was, in fact, muddled at the time of the accident: he asserted, however, that he was instantly deprived of sight. Had he (Mr. Arnott) been able to make out that there was an interval, he should have thought more favourably of the case; but when, three days after his admission, he found that the sclerotic was actually burst and the pupil displaced, that the eye was flaccid and the iris tremulous, he expressed himself as having little expectation of the sight being restored. The displacement of the pupil, as observed in this case, was not an unusual effect of blows on the eye. It seemed to depend on an injury done to the ciliary ligament, or nerves, the iris at the part corresponding to the blow or injury, contracting and disappearing. On the other hand, from a blow the iris sometimes became separated or detached from the ciliary ligament, and then a double pupil was formed.

The treatment of the case was sufficiently simple; there was effusion of blood within the eye, but no sign of inflammation. The removal of blood was to be the work of nature; we could do little to help her, except by preventing inflammation, which would have interfered with the process, but of which there were no signs in this case. The patient was not bled, not even by having leeches applied. He was not of full habit, and had an indifferent pulse. He was purged, and kept on low diet, and cold was applied to the eye: these remedies were found sufficient.

Notwithstanding the unpromising appearance, the case turned out better than was anticipated. Seven days after his admission, he could distinguish light from darkness, and his sight gradually improved in proportion, apparently, to the removal of the blood from the interior of the eye. He took mercury with the view of aiding absorption, but the lecturer questioned if it had much to do with the improvement.

One day after the pupil became visible, the patient hearing him advert to the situation of it at the upper part of the eye, informed him that it had been so for the last four years. That at that time being in India, he had received a blow from a man; and that the nail of his thumb wounded his eye, and that the surgeon who attended him then told him of the alteration in the pupil. There is no reason to doubt the man's statement, though possibly, with regard to the injury by the nail, there might be some question, as he only mentioned this after hearing how the patient in the next bed had been injured. Since the accident in India his sight had not been so good as previously, yet up to the occurrence for which he entered the hospital, he was able to follow the calling of a newsman, and could read with the aid of glasses. He had now nearly recovered the same power of vision, and would leave the hospital next week.

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62. *Symblepharon.*—M. PETREQUIN, of Lyons, has performed a somewhat novel operation for the cure of this species of deformity, the result apparently, in the case recorded, of repeated operations for pterygium. A gentleman of Clermont, Savoy, was affected with pterygia in each eye, caused by chronic engorgement. In 1834, Mayor, of Geneva, operated on him, and the left eye was perfectly cured; the pterygium in the right, on the contrary, returned at the end of a month, and was attended with pain and some difficulty in the motions of the eye. The second time he was operated on by M. Maunoir, but with temporary success. The pterygium returned, and increased rapidly. Riberi, of Turin, who was next consulted, excised a portion of the caruncle with the pterygium, and applied caustic afterwards. This time fibrous bands formed, causing adhesion of the eyelids to the globe of the eye. These bands were excised by a physician at Chambéry, the operation being followed by large granulations, which were extirpated again and again, and finally repressed by the application of the sulphate of copper and nitrate of silver. Cicatrization took place gradually, but at the same time there formed a mass of fibrous bands, disposed fan-shape, the base attached to the internal surface of the two eyelids, the apex extending to and terminating on the cornea, which it partially covered to the extent of two lines (1-6th of an inch.) M. Pétrequin saw the patient in this state on the 10th of April, 1841, and on examination found the eyelids bound together and to the eye, by a multitude of dense, fibrous bands, which rendered their motion very difficult. When the patient looked outwards to the right he had double vision, as also, but in a less degree, when he looked much to the left.